UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/611,447	07/06/2000	Guo-Qiang Wang	91436-265	6335

22463 7590 03/02/2004

SMART AND BIGGAR
438 UNIVERSITY AVENUE
SUITE 1500 BOX 111
TORONTO, ON M5G2K8
CANADA

EXAMINER	
MILLS, DONALD L	

ART UNIT	PAPER NUMBER
2662	4

DATE MAILED: 03/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/611,447	WANG ET AL.	
	Examiner	Art Unit	
	Donald L Mills	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 11-15 are rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility.

Regarding claims 11-15, the claims merely recite a data structure, for example, *a type field, length field, and a value field*... (See claim 12, lines 4-8.) The data structure is a mere arrangement of data, independent of physical data. The data structure does not represent a process, machine, manufacture, or composition of matter. The claim merely manipulates an abstract idea without producing a "useful, concrete and tangible result;" therefore, claims 12-15 are directed to non-statutory subject matter.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 6-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Boivie (US 6,577,418 B1).

Regarding claim 6, Boivie discloses *encoding a representation of the traffic characteristics of the interface so as to comprise a type field, a length field and a value field, where the value field comprises an attribute* (Referring to Figure 5B, the Optical IP Switch implements an LDP, which by definition contains a structure that uses a Type, Length, and Value field. By definition, the value field can contain other TLVs or information that is to be interpreted as specified by the type field. See column 4, lines 66-67 and column 5, lines1-3.)

Regarding claim 7, Boivie discloses *the attribute comprising an indication of service type of the service network* (Referring to Figure 5B, the Optical IP Switch implements an LDP, which by definition contains a structure that uses a Type, Length, and Value field inherently comprising an indication of IP service. See column 4, lines 66-67 and column 5, lines1-3.)

Regarding claim 8, Boivie discloses *the attribute comprising an indication of a control protocol of the service network* (Referring to Figure 5B, the Optical IP Switch implements an LDP, which by definition contains a structure that uses a Type, Length, and Value field inherently comprising an indication of IP service. See column 4, lines 66-67 and column 5, lines1-3.)

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 2, 11-13, 16, 17, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boivie (US 6,577,418 B1) in view of Jamoussi (Internet Draft, "Constraint-Based LSP Setup Using LDP").

Regarding claims 1, 11, 16, and 20, Boivie discloses *assigning an optical label to a channel group* (Referring to Figure 5B, the Optical IP Switch implements an LDP, which is inherently associated to a group of channels. See column 4, lines 66-67 and column 5, lines1-3,) *the channel group using one of the fiber optic links and comprising a plurality of channels* (Referring to Figure 5A, switch **50** connects to two "bundles" of optical fibers **52**, which inherently transport a group of channels. See column 6, lines 12-15.) And, *encoding the optical label so as to comprise a type field, a length field and a value field* (Referring to Figure 5B, the Optical IP Switch implements an LDP, which by definition contains a structure that uses a Type, Length, and Value field. By definition, the value field can contain other TLVs or information that is to be interpreted as specified by the type field. See column 4, lines 66-67 and column 5, lines1-3.) Boivie does not disclose *where the value field comprises a label component and where the label component comprises an indication of bandwidth on each of the plurality of channels.*

Jamoussi teaches a method of constraint based routing (CR) in MPLS, which defines TLV encoding that includes a type, length, and value field. Wherein, the value field contains five Traffic Parameters including data rates (See page 15, section 4.3.) Jamoussi further teaches that one may want to use CR-LSP to assign certain bandwidth or other Service Class characteristics to the LSP (Page 6, section 2.1.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the constraint based routing of Jamoussi in the Optical IP Switch of Boivie. One of ordinary skill in the art at the time the invention was made would have been motivated to do so in order to assign certain bandwidth characteristics to the LSP for QoS.

Regarding claims 2 as explained above in the rejection statement of claim 1, Boivie and Jamoussi disclose all the claim limitations of claim 1 (parent claim). Boivie does not disclose an *indication of bandwidth that identifies said one of said fiber optic links and a wavelength on said one of said fiber optic links.*

Jamoussi teaches a method of constraint based routing (CR) in MPLS, which defines TLV encoding that includes a type, length, and value field. Wherein, the value field contains five Traffic Parameters including data rates (See page 15, section 4.3.) Jamoussi further teaches that one may want to use CR-LSP to assign certain bandwidth or other Service Class characteristics to the LSP (Page 6, section 2.1.) Boivie teaches an optical IP switch which implements an LDP with route table destinations corresponding to different wavelengths on different fibers (See column 6, lines 6-10.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the constraint based routing of Jamoussi in the Optical IP Switch of Boivie. One of ordinary skill in the art at the time the invention was made would have been motivated to do so in order to assign certain bandwidth characteristics to the LSP for QoS.

Regarding claims 12, 17, and 21, Boivie discloses *a type field; a length field; and a value field (Claim 12)/encode a representation of characteristics of traffic over an interface between a node in a service network and said optical label switching router so as to comprise a type field, a*

length field and a value field (Claim 17 and 21) (Referring to Figure 5B, the Optical IP Switch implements an LDP, which by definition contains a structure that uses a Type, Length, and Value field. By definition, the value field can contain other TLVs or information that is to be interpreted as specified by the type field. See column 4, lines 66-67 and column 5, lines1-3.) Boivie does not disclose *where said value field comprises an attribute and where said attribute comprises an indication of a service type of said service network.*

Jamoussi teaches a method of constraint based routing (CR) in MPLS, which defines TLV encoding that includes a type, length, and value field. Wherein, the value field contains five Traffic Parameters including data rates (See page 15, section 4.3.) Jamoussi further teaches that one may want to use CR-LSP to assign certain bandwidth or other Service Class characteristics to the LSP (Page 6, section 2.1.) Boivie teaches an optical IP switch which implements an LDP with route table destinations corresponding to different wavelengths on different fibers (See column 6, lines 6-10.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the constraint based routing of Jamoussi in the Optical IP Switch of Boivie. One of ordinary skill in the art at the time the invention was made would have been motivated to do so in order to assign certain bandwidth characteristics to the LSP for QoS.

Regarding claim 13, Boivie discloses *a type field; a length field; and a value field* (Referring to Figure 5B, the Optical IP Switch implements an LDP, which by definition contains a structure that uses a Type, Length, and Value field. By definition, the value field can contain other TLVs or information that is to be interpreted as specified by the type field. See column 4, lines 66-67 and column 5, lines1-3.) Boivie does not disclose *where said value field comprises*

an attribute and where said attribute comprises an indication of a control protocol of said service network.

Jamoussi teaches a method of constraint based routing (CR) in MPLS, which defines TLV encoding that includes a type, length, and value field. Wherein, the value field contains five Traffic Parameters including data rates (See page 15, section 4.3.) Jamoussi further teaches that one may want to use CR-LSP to assign certain bandwidth or other Service Class characteristics to the LSP (Page 6, section 2.1.) Boivie teaches an optical IP switch which implements an LDP with route table destinations corresponding to different wavelengths on different fibers (See column 6, lines 6-10.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the constraint based routing of Jamoussi in the Optical IP Switch of Boivie. One of ordinary skill in the art at the time the invention was made would have been motivated to do so in order to assign certain bandwidth characteristics to the LSP for QoS.

7. Claims 1-5, 9, 10, 14-16, 18-20, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boivie (US 6,577,418 B1) in view of Tang et al. (Internet Draft, "Extensions to CR-LDP for Path Establishment in Optical Networks,") hereinafter referred to as Tang.

Regarding claims 1, 16, and 20, Boivie discloses *assigning an optical label to a channel group* (Referring to Figure 5B, the Optical IP Switch implements an LDP, which is inherently associated to a group of channels. See column 4, lines 66-67 and column 5, lines1-3,) *the channel group using one of the fiber optic links and comprising a plurality of channels* (Referring to Figure 5A, switch **50** connects to two "bundles" of optical fibers **52**, which

inherently transport a group of channels. See column 6, lines 12-15.) And, *encoding the optical label so as to comprise a type field, a length field and a value field* (Referring to Figure 5B, the Optical IP Switch implements an LDP, which by definition contains a structure that uses a Type, Length, and Value field. By definition, the value field can contain other TLVs or information that is to be interpreted as specified by the type field. See column 4, lines 66-67 and column 5, lines1-3.) Boivie does not disclose *where the value field comprises a label component and where the label component comprises an indication of bandwidth on each of the plurality of channels.*

Tang teaches an Optical Label TLV, which is used to specify the output port ID and the associated wavelength when an OXC sends a Label Mapping message to its upstream peer for a path setup. The TLV comprises a Wavelength ID and a Sub-channel ID (See page 4, section 6.1.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the Optical Label TLV in the system of Boivie. One of ordinary skill in the art would have been motivated to do so in order to establish switched paths in the optical network as taught by Tang (See page 1, section 3.)

Regarding claims 2 as explained above in the rejection statement of claim 1, Boivie and Tang disclose all the claim limitations of claim 1 (parent claim). Boivie does not disclose an *indication of bandwidth that identifies said one of said fiber optic links and a wavelength on said one of said fiber optic links.*

Tang teaches an Optical Label TLV, which is used to specify the output port ID and the associated wavelength when an OXC sends a Label Mapping message to its upstream peer for a

path setup. The TLV comprises a Wavelength ID and a Sub-channel ID (See page 4, section 6.1.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the Optical Label TLV in the system of Boivie. One of ordinary skill in the art would have been motivated to do so in order to establish switched paths in the optical network as taught by Tang (See page 1, section 3.)

Regarding claim 3 as explained above in the rejection statement of claim 1, Boivie and Tang disclose all of the claim limitations of claim 1 (parent claim). Boivie does not disclose *wherein said indication of bandwidth further identifies said channel group.*

Tang teaches an Optical Label TLV, which is used to specify the output port ID and the associated wavelength when an OXC sends a Label Mapping message to its upstream peer for a path setup. The TLV comprises a Wavelength ID and a Sub-channel ID, inherently comprising the channel groups (See page 4, section 6.1.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the Optical Label TLV in the system of Boivie. One of ordinary skill in the art would have been motivated to do so in order to establish switched paths in the optical network as taught by Tang (See page 1, section 3.)

Regarding claim 4 as explained above in the rejection statement of claim 1, Boivie and Tang disclose all of the claim limitations of claim 1 (parent claim). Boivie does not disclose *wherein said bandwidth on each of said plurality of channels is represented by a single bit.*

Tang teaches an Optical Label TLV, which is used to specify the output port ID and the associated wavelength when an OXC sends a Label Mapping message to its upstream peer for a

path setup. The TLV comprises a Wavelength ID and a Sub-channel ID, inherently comprising the channel groups (See page 4, section 6.1.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the Optical Label TLV in the system of Boivie utilizing a single bit to represent the Sub-channel ID. One of ordinary skill in the art would have been motivated to do so in order to establish switched paths in the optical network as taught by Tang (See page 1, section 3,) utilizing only a single bit for the Sub-channel ID to minimize system complexity for systems with only one or two channels.

Regarding claim 5 as explained above in the rejection statement of claim 1, Boivie and Tang disclose all of the claim limitations of claim 1 (parent claim). Boivie does not disclose *wherein a bit value of zero indicates available bandwidth on a given one of a said plurality of channels.*

Tang teaches an Optical Label TLV, which is used to specify the output port ID and the associated wavelength when an OXC sends a Label Mapping message to its upstream peer for a path setup. The TLV comprises a Wavelength ID and a Sub-channel ID, inherently comprising the channel groups (See page 4, section 6.1.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the Optical Label TLV in the system of Boivie utilizing a bit value of zero to represent an available Sub-channel ID. One of ordinary skill in the art would have been motivated to do so in order to establish switched paths in the optical network as taught by Tang (See page 1, section 3,) utilizing only a single bit for the Sub-channel ID to minimize system complexity for systems with only one or two channels.

Regarding claims 9, 14, 18, and 22, Boivie discloses *encoding a representation of said characteristics of said optical trail so as to comprise a type field, a length field and a value field (Claim 9, 18, and 22)/a type field, a length field and a value field (Claim 14)* (Referring to Figure 5B, the Optical IP Switch implements an LDP, which by definition contains a structure that uses a Type, Length, and Value field. By definition, the value field can contain other TLVs or information that is to be interpreted as specified by the type field. See column 4, lines 66-67 and column 5, lines1-3.) Boivie does not disclose w*here said channel group description comprises an indication of channel group type and an indication of a number of members in said channel group.*

Tang teaches an Optical Label TLV, which is used to specify the output port ID and the associated wavelength when an OXC sends a Label Mapping message to its upstream peer for a path setup. The TLV comprises a Wavelength ID and a Sub-channel ID (See page 4, section 6.1.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the Optical Label TLV in the system of Boivie. One of ordinary skill in the art would have been motivated to do so in order to establish switched paths in the optical network as taught by Tang (See page 1, section 3.)

Regarding claims 10, 15, 19, and 23, Boivie discloses *encoding a specification of said session parameters so as to comprise a type field, a length field and a value field* (Referring to Figure 5B, the Optical IP Switch implements an LDP, which by definition contains a structure that uses a Type, Length, and Value field. By definition, the value field can contain other TLVs or information that is to be interpreted as specified by the type field. See column 4, lines 66-67

and column 5, lines1-3.) Boivie does not disclose *where said value field comprises a range component which comprises an identity of one of said fiber optic links, a lower bound of a block of wavelengths supported by said originating label switching router on said one of said fiber optic links, and an upper bound of said block of wavelengths supported by said originating label switching router on said one of said fiber optic links.*

Tang teaches an Optical Label TLV, which is used to specify the output port ID and the associated wavelength when an OXC sends a Label Mapping message to its upstream peer for a path setup. The TLV comprises a Wavelength ID and a Sub-channel ID (See page 4, section 6.1.) The a single Wavelength ID inherently acts both an upper and lower bound of wavelengths.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the Optical Label TLV in the system of Boivie. One of ordinary skill in the art would have been motivated to do so in order to establish switched paths in the optical network as taught by Tang (See page 1, section 3.)

Conclusion

8. Applicant is advised that should claims 1, 8-10, and 12 be found allowable, claims 13, 16, and 18-23 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L Mills whose telephone number is 703-305-7869. The examiner can normally be reached on 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 703-305-4744. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Donald L Mills
DLM
February 25, 2004

CHAU NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600